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PLAIN RULES

FOR

THE STABLE

BY

PROF. GAMGEE SEN.

AND

PROFESSOR JOHN GAMGEE,

OF THE

ALBERT VETERINARY COLLEGE.



LONDON:

FREDERICK WARNE & CO.

BEDFORD STREET, COVENT GARDEN.





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PLAIN RULES

FOR

THE STABLE.

BY

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LONDON.

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P R E F A C E
TO
THE SECOND EDITION.

THE rapid sale of a first and large Edition of this little work, has proved that there were good grounds for believing that Plain Rules relating to Stable management would prove acceptable to many. We felt that brevity was a great desideratum in such a work as this, and we still think that it would be undesirable to add to it so as materially to increase its size. In the present Edition we have introduced notes on baths, on summering hunters, the straw-yard, and other subjects.

ALBERT VETERINARY COLLEGE,
QUEEN'S ROAD, BAYSWATER, LONDON.

April 10, 1866.

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P R E F A C E

TO

T H E F I R S T E D I T I O N .

“PLAIN Rules for the Stable” have been framed by us in compliance with the request of many friends. The proper and successful management of horses is by no means an easy task, and much of the pleasure and profit to be derived from a good stud may be marred for want of some special knowledge. From the concise form we have adopted, it must be evident that we have not attempted to exhaust the vast subject of stable management. On the leading points, concerning which there may be differences of opinion, somewhat ample instructions are given. We do not profess to write in

a few pages so much as to include all systems, nor are we by any means prepared to condemn some of the recommendations of others which may not agree with those we have given. It would be too much to expect that we should instantly convert all who have been taught to believe that horses' legs cannot be too constantly bandaged, that meshes cannot be too frequently given, that knee-caps are invaluable means of protection, and that horses' feet should be kept wet with water and cow-droppings. These and many other points on which we are opposed to established practice have received much attention at our hands, and experience has been obtained in hunting and racing stables; on long journeys with strings of horses, at home and abroad; in the management of large studs, where our aim was the prevention of disease; and in the charge of horses entrusted to our care for medical treatment. With experience, varied and extensive; with a strong desire always to ascertain that which is best; and with an appreciation of the value of various systems

of management in different parts of Europe : we can fairly undertake to write without prejudice, though we have on some points to combat old notions, which are so deeply rooted that it may be deemed an act of temerity to attempt their reform.

ALBERT VETERINARY COLLEGE,
QUEEN'S ROAD, BAYSWATER, LONDON.

March 20, 1866.

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PLAIN RULES FOR THE STABLE.

STABLE ROUTINE.

PUNCTUALITY in attendance at stable, and great regularity as to times of feeding, exercise &c., operate largely in securing the comfort and proper condition of horses.

Morning Hour.—Regulated in some measure according to the purpose for which horses are used.

Hunting stables, 5.30 A.M.

Racing stables, 6 A.M. in winter.

Do. do. 4 to 5 A.M. in summer.

Town stables, 5 to 6 A.M. according to the work.

Note.—Whatever use horses are put to, they should be attended to in the morning at least an hour and a half before commencing work.

Special Duty.—Feed; clean the stable tho-

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roughly ; water. When horses are to be exercised, they should be wiped over and got ready. When they are going to work, dress over and prepare. Give a little hay, or if necessary, in case of hard work, a second small feed of corn.

Horses returning from exercise have their feet washed, and the stable is set fair. A small portion of hay allotted to them.

Nine A.M.—Breakfast hour.

Eight o'clock breakfasts and luncheon at eleven leave no proper time for work.

After breakfast hunting-grooms dress their horses.

Racing lads breakfast earlier in winter, and exercise afterwards.

Noon.—Feed, and give a little hay afterwards. Water, according to circumstances, if horses are not going out. Set stable fair.

When horses are used in the middle of the day, water and feed after they return home.

Four o'clock.—In those stables where horses are fed four times a day, one feed may be given at 4 P.M.

Seven P.M.—Take off clothing, wisp the horse over, clothe again, and make up the beds. Notice with horses in stalls if the head collars and reins are firm and fairly fixed.

Feed about 8 P.M.

Give about 7lbs. of hay to each horse.

Finish up the stable at 8.30 P.M.

STABLE CLEANLINESS.

Stables should be so built, furnished, paved, drained, and ventilated, as not to harbour dirt, and especially not to imprison the abundant organic products which are discharged by animals day and night.

Sweeping.—The fork is first used to separate clean from wet and dirty straw. The clean is thrown forwards and the dirty pushed back. The stall is then thoroughly swept.

Washing.—Should the stable be thoroughly paved and drained, so as not to retain moisture, the back part of each stall may be sluiced with water. This tends to keep the stable sweet,

but it should not be practised if much wet is unavoidably left behind, in which the horse is compelled to stand. Fore feet should be always high and dry, and are usually in front of any part requiring to be flushed.

Disinfectants.—Disinfectants may be used after horses are cleaned, and before fresh litter is thrown down. There are three classes of agents which serve our purpose. First, animal or vegetable charcoal, in a dry and finely subdivided state. Tan or peat charcoal may be had at small cost, and should be used when there is not much wet. Secondly, sawdust, alone, or sprinkled with dilute sulphuric acid, so as to absorb the ammonia. Thirdly, patent disinfecting powders, concerning which, in each case, the opinion of a reliable professional man should be obtained.

How to use Disinfectants.—They should be sprinkled on the floor of stalls and boxes with a dredger before the straw is laid down. In large towns it is important to have the manure heaps thoroughly disinfected.

We have adopted a novel system, concern-

ing which further experience is wanted, and it consists in suspending perforated drums* charged with deodorizing and antiseptic substances, so as to aid in the purification of the usually fetid atmosphere of a stable.

Disposal of Manure.—Remove as soon as dropped, in a basket, to a manure heap. Don't keep it in the stable. Place the heap as far as possible from doors, windows, and sources of ventilation. When properly disinfected the manure heap is harmless, but it should not be placed, as is too commonly the case, in close proximity to the entrance of a stable.

STABLE BEDDING.

Horses should be kept standing dry, whether on the pavement or on litter. The litter, as a rule, consists of straw, but under certain circumstances dry sawdust, tan, chestnut leaves, ferns, &c., can be used with economy and advantage.

* Mr. Barton, the eminent manufacturer of stable fittings, Oxford Street, has kindly undertaken the introduction of this plan.

Wheat straw is the best, and we cannot too strongly recommend the late Prince Consort's suggestion of cutting the long straw into moderate lengths, whereby waste is prevented. This happens as follows:—wherever urine flows on straw litter it penetrates the tubular straw by capillary attraction. If the litter is short, the urine is usually absorbed by a small portion, and thus great waste is avoided. In Italy the custom has long prevailed of keeping a sickle in each stable, so as to cut the sheaves asunder in the middle. The tops are thrown down for litter, and the bottoms, which are mixed with clover and other grasses, are thrown into the racks.

Although, for the sake of economy, horses may be made to stand all day on the bare stones, it is not a fact that any benefit to them accrues from this practice. On the contrary, experience teaches us to prefer keeping a comfortable and light layer of straw under the horse, even during the day time.

The practice of keeping horses, and especially those used for agricultural purposes, on

damp layers of manure, cannot be too strongly condemned. It may be admirable for the manure heap, but it is most detrimental to the horse's feet, and not favourable to the soundness of eyes and lungs. This statement is not affected by the exceptional results where a large amount of space and great attention tend to mitigate the evils arising from the practice.

STABLE VENTILATION.

In securing constant and imperceptible atmospheric currents, so that the air in a stable never can become too highly charged with impurities, the simplest system must be regarded as the best.

The usual source for the egress and ingress of air should be so disposed as to preclude the possibility of being closed by wisps of hay and straw, cloths, or boards, which are so often placed in winter against every perceptible opening into a stable.

Wide unprotected ventilating openings are objectionable, except so high above a horse as to prevent direct draughts ; and even then they

are often objectionable, if so free as to interfere with regulating the temperature of a stable. The theory of admitting air by holes near the floor and permitting an escape near the ceiling is plausible, but in practice we find such air-holes always to favour draughts, and especially against the tender skin of the horse's heels.

Ventilating shafts, and a variety of systems to produce air-currents through tubes in the ceiling, fail, as a rule, in securing the desired object. We have insisted on this point for a long time, and have recently been supported in our views by a report on the ventilation of cavalry stables. The commissioners state—“When the shafts are properly made, the action of the law of difference of temperature occasions a more or less constant movement upwards, to compensate which fresh air enters the stable, and so the amount of stagnant air is diminished. We have examined a number of stables in which these shafts have been introduced. The state of the air we found to be better in some than in others, and much better, no doubt, in all than it would have

been in the absence of the shafts ; but the results generally show that it is a mistake to construct stables on a plan which renders such shafts necessary. There is, no doubt, an additional movement of the air effected by them, but it is questionable whether any particular size of shaft would ventilate such stables sufficiently.”

The recommendations we have to make are—

First. That every stable should be constructed to afford about 1500 cubic feet of space for each horse.

Second. That in stables with lofts and apartments above them there should be, at a distance of about six inches from the ceiling, sufficient openings, protected by wire gauze, allowing from 3 to 5 square feet of ventilating outlet, and ensuring thus a free diffusion between the internal and external air.

Third. In the absence of special openings, the windows may be made available for ventilating purposes by substituting wire gauze or perforated zinc for glass, and precluding

the possibility of the apertures being blocked up.

Fourth. In stables without apartments or lofts above, the plan suggested by the commission appointed to report on ventilation of cavalry stables may be adopted, viz., ventilating by a louvre, 16 inches wide, carried from end to end of the roof, affording about 4 square feet of ventilating outlet for each horse.

Fifth. Swing windows may be provided, 3 feet 3 inches high by 2 feet 6 inches wide, but they are not to be depended upon for regular ventilating purposes.

Sixth. There are two important suggestions made in the report above quoted, which refer to the ready removal of excreta contaminating the atmosphere. The first is, that impervious paving be used; and the second, that all drainage within the stable be carried away, in shallow impervious open drains, by a rapid slope, to the outside of the stable. Covered drains and cesspits within stables, or near the stable walls, to be discontinued.

STABLE TEMPERATURE.

The question of temperature should never be confounded with ventilation. Fresh air is essential to animal heat. Horses confined in a hot stable, without sufficient air to breathe, have staring coats and suffer cold. Adequate warmth is essential to health; to secure it we must have an absence of cold draughts of air, and stables should be of moderate size, so that the heat within them may be regulated. Remove a horse from the fields, where he can move about to keep up an active circulation and a proper bodily temperature, and it is essential to regulate the heat of the stable in which he is placed. At all events, if it is found difficult to regulate the warmth of the stable, horses must be protected by adequate clothing.

The proper temperature for a stable is about 50° Fahr.

CLEANING HORSES.

The art of dressing a horse thoroughly is not readily acquired, and is far from being

generally understood. Good grooms, going to work in earnest, and wishing to put a gloss on their horses' skins, use the following means :—

1. *The curry-comb*, to open the coat and remove rough dirt.

2. *The straw wisp*, used with diligence and activity.

3. *The brush*, applied thoroughly.

4. *The damp hay wisp*.

And lastly, *a linen or flannel rubber*, with which to go over the whole body.

Assuming that the horse's feet have been previously washed, the legs should now be hand-rubbed till clean and dry, and this completes the process.

Dressing Horses after Work.—On entering the stable, after removing saddle and bridle, or harness, throw a rug over the horse. Turn him round, and then with sponge and water wash his mouth and face, and with soft wisp and dry rubber make the head clean and comfortable. Let the horse then move round to his manger and get a small portion of hay.

Remove the cloth, and let the rough dirt and sweat be got quickly off the body; throw a rug again loosely over him, and wash his feet. In the case of hunters, wash the legs in a pail of warm water from above the knees and hocks downwards; then sponge the sheath and thin skin between his thighs, and let the water be got out of the hair by the use of a chamois leather, and when nearly dry put flannel bandages *loosely* round the legs. After the horse has had some warm water-gruel or bran-and-water, and had a light feed of oats and bran, followed by a little hay, the bandages may be taken off; the animal must then be thoroughly well dressed, and his legs hand-rubbed.

A practice has come in vogue of washing tired and even perspiring horses with cold or tepid water, then putting them into the stable, and rubbing them down with a wisp of straw an hour later. The general washing is objectionable. The feet should be washed, body wisped, legs well cleaned, brushed, and hand-rubbed, and the animal then clothed.

CLOTHING HORSES.

The artificial state in which horses are kept necessitates the covering of the body to a greater or less extent, according to season and other circumstances. The best clothing is one good woollen rug with a simple roller. This has the advantage of not being impermeable, while at the same time it admits of the free action of the skin and exhalation through it. It is eminently objectionable to cover a horse with one or more cloths calculated to confine the perspiration and prevent that healthy discharge of effete matter which should be freely thrown off from the skin. It is likewise not to be advocated, as a rule, to do more than fairly envelope the animal's trunk, as the habitual use of hoods and breast-cloths—race horses in training sometimes excepted—is apt to interfere with healthy functions. The woollen rugs are required of different size and weight, according to the size and condition of horse and other requirements. The blanket rugs in ordinary use weigh from 5 to 9 lbs.

HORSE BATHS.

The influence of cold and warm water baths on horses varies according to the season, climate, and the state of health or condition of the animals bathed.

The difficulties experienced in constructing baths into which horses may be completely immersed, operate against their general use, and in this country it would probably never be desirable to resort, as a rule, to a system of regular bathing which really offers few advantages.

In warm countries, and during the hottest periods of the year, horses enjoy walking into a river or into the sea, and it is in some parts not at all uncommon to bathe them thus morning or evening. The animals are thus refreshed, cleansed, and experience comfort. It has been known for centuries that even in Southern Europe, where the temperature in summer is much higher than with us, horses in good condition, and especially those that are fat, enjoy walking into deep

water; whereas those that are lean and poor, dread being submerged, and do not benefit by the process.

On the whole, the advantages men derive from cold and warm baths are not witnessed in horses, as they are neutralized by the difficulties in rapid drying from the whole surface of the body being covered with a coat of hair. We oppose the practice of river bathing, or standing horses in ponds, sometimes had recourse to in this country.

The Hot-air Turkish or Roman bath has of late years been introduced here, but its advocates have erred in attributing to it virtues which it does not possess, and for a time this interfered with its adoption for some cases in which it is found to serve in practice.

The hot-air bath should consist in a well-ventilated capacious chamber, always lofty, which can be heated by flues encircling it, and kept at a temperature from 120° to 150° Fahr. Near this chamber another, with an abundant supply of water for drenching and ordinary washing purposes is required, and a comfort-

able stable to which a horse may be at last removed should be close at hand.

It is evident that such an appliance can only be had conveniently for the benefit of large studs, or in conjunction with horse infirmaries. It is better not to have a hot-air bath where the essential requisite of abundant space is not at hand; and this we say somewhat in opposition to a statement commonly made that any corner into which a horse can be placed, if heated enough, will serve the purpose.

The hot-air bath may be made to serve various purposes. In the first place, it is the best means for purifying the skin and causing horses to sweat without that amount of exertion which may be prejudicial to them if out of condition. Every one knows that a profuse perspiration is often the best means of getting the skin thoroughly clean and the coat open, so as to facilitate the ordinary process of cleaning.

Secondly. A horse may be placed for a short time in the hot-air chamber at 120°,

after having been freely washed on his return home dirty from hard work. He may thus be rapidly dried, and on removal from the hot chamber should be briskly rubbed over, clothed, and placed in a comfortable stable.

Thirdly. As a therapeutic means the hot-air bath is sometimes of great value, and from the difficulties experienced in inducing free action of the skin by the internal administration of diaphoretics we have no other system so prompt and effectual to bring about a salutary perspiration as the use of external heat. In various forms of skin disease, in horses out of condition and with a tendency to colds, coughs, &c., the hot-air bath is undoubtedly of value.

The hot-air bath cannot, as was at one time supposed, supersede a horse's gallops. Without exercise, it cannot tend to develop muscle, and it is only useful for special purposes such as those enumerated.

BANDAGES AND KNEE-CAPS.

Bandages are used for two purposes: first, as surgical appliances; secondly, as a means of securing warmth to the animal. In both instances their influence has not been well understood.

Woollen bandages are decidedly preferable. They should be about three yards long and six inches wide; made out of serge expressly woven, of the proper width, and provided with woollen tapes. Linen bandages are essentially serviceable in some surgical cases, and should be made similar to the above.

In the ordinary application of a bandage to a horse's leg, the groom places himself a little in front of the limb, and holding the rolled bandage in his right hand, he fixes it with the left. He begins by applying it midway between the fetlock and the knee or hock, circumscribing the limb straight round at first, and then passing obliquely downwards, so as to cover in a few coils the fetlock and pastern; he then rolls it upwards, guides his folds so as

to prevent wrinkles, avoids any undue tightness, and finishes by tying the bandage a little below the knee or hock. Horses' limbs are bandaged for the purpose of being dried, and the bandages should not be kept on longer than from one to two hours, at the expiration of which the legs should be rubbed. When bandages are required simply for the purpose of warmth they should be applied loosely, and removed once in six or eight hours, and the horse's legs rubbed. For this object they are not so much required as custom has sanctioned.

Wet bandages are remedial means of great value when used with moderation and judgment. A bandage wetted in warm water is equivalent to a fomentation, and in some cases to a poultice. It is as objectionable as fomentations and poultices, when used beyond the period for which it can be of any real service, and this seldom exceeds two or three days.

Few of the useful stable appliances have been more abused than bandages. It has been erroneously assumed, that by binding

up horses' legs tightly they are thereby strengthened, and race-horses, hunters, and even hacks are seen with ineffaceable weals on their legs as the result of this practice. The direct effect of this excessive pressure and permanent covering of the skin is to induce a most detrimental functional inactivity.

Knee-caps are in constant use when horses are exercised and on a journey. Why should they be more required then than when animals are at their ordinary work? Why should they be used in this country and only to a very limited extent elsewhere, in parts where English customs in horse matters prevail? A knee-cap must be firmly strapped above the knee, binding the extensor and flexor tendons, pressing on the blood-vessels, and thus impeding action to an extent which few can really appreciate. We have witnessed excoriations, bruises, and ulceration of the skin from the abuse of knee-caps.

It may be argued that the abuse of a practice does not necessarily indicate that it may

not be advantageous in some cases. On long journeys by road, rail, or steam, they are always objectionable, and on short ones there can be no reason for their use. We are convinced that they are an unmitigated evil, and should be banished from every well-conducted stable.

FEEDING.

The staple articles of a horse's diet are hay, oats, bran, and beans. The adjuncts which are used more or less in different parts are barley, linseed, straw, locust-beans, cut grass in summer, carrots, turnips, potatoes, and artificial or concentrated foods.

Hay is the essential food of the horse in a state of domesticity. It is his bread, and should be sound, well-grown, and well-got. Upland meadow hay is the best, and should be used after laying due time in the stack.

Dr. Anderson has furnished us with the following table, as indicating the nutritive value of clover hay.

Moisture	16·84
Flesh-forming substances . . .	13·52
Non-nitrogenized substances . .	64·43
Mineral matters (ash)	5·51

The mean nutritive value of 25 samples of common meadow hay was as follows :—

Water	14·61
Flesh-forming constituents . . .	8·44
Respiratory and fatty matters . .	43·63
Woody fibre	27·16
Mineral matters (ash)	6·16

The amount of hay required, taking horses of all kinds, would be from twelve to fourteen pounds per head a day. Half this quantity to be given to the horse the last thing at night, and the other half to be apportioned in small quantities at intervals throughout the day.

The common prejudice, of somewhat recent origin, which would deprive the hunter, or other horse required in condition for fast work, of his proper amount of hay, is based on error. No horse can be kept sound and in full vigour without being allowed a proper quantity of hay without intermission. Coarse

bad hay in excessive quantity may induce indigestion and hence broken wind; but sound hay in moderation is essential to the horse's health.

The hay should not be wetted. This is done under the impression that it prevents coughing, but a horse should moisten his food with his saliva during mastication, and is never so well as when fed on dry food.

Straw is sometimes an indispensable substitute for hay. A horse's food must be sufficiently bulky in order to fill the capacious intestines; and it is probably owing to this, amongst other reasons, that an animal cannot be kept in high condition on corn alone. When hay cannot be had, straw is made to serve our purpose, though we find that it is impossible to get horses into good hard-working condition on straw, whatever may be the food we combine with it. The reason for this is, that straw contains a large amount of innutritious woody fibre, and little flesh-forming principle. The subjoined table gives us the

NUTRITIVE VALUE OF STRAWS.

	Wheat.	Rye.	Barley.	Oats.	Common Scotch Bean.	Winter Bean.	Peas.
Water.....	14.23	14.30	14.30	12.06	19.23	20.90	12.00
Flesh-forming matter.....	1.79	2.29	1.68	1.63	8.25	6.79	12.55
Respiratory and fatty matter.....}	31.06	37.15	39.98	37.86	65.85	65.96	21.93
Woody fibre	45.45	43.18	39.80	43.60	—	—	47.52
Mineral matter (ash).....	7.47	3.08	4.24	4.85	6.67	6.35	6.00

Chaff consists of cut clover and meadow hay, straw, or both combined. It is specially useful where horses are fed with the nose-bag over the whole day, as is the case with dray and cab horses. It is a substitute for hay in its ordinary form, which could not be as conveniently carried about. The common practice in large establishments is to mix corn with chaff in about equal quantities.

Good oats are indispensable ; that is to say, a horse does not benefit as much from a large quantity of an inferior quality as from a moderate feed of sound corn at not less than 40lbs. the bushel.

The varieties of oats to be preferred are—
1. The potato oat ; white, short, and plump,

clean and stout ; weighing 44 lbs. to 46lbs. per bushel. 2. The sandy oat of Aberdeenshire. 3. The English black oat, much grown in the Eastern counties.

Professor Voelcker has found the following to be the proportions of husk and meal in English and Scotch oats :—

	White Scotch oats.	Black English oats.
Meal . . .	28·5 . . .	33·7
Husk . . .	71·5 . . .	66·3

“Dr. Voelcker also found that the Scotch oat was richer in nitrogen compounds than the English oat ; the former containing 14·743 per cent., while the latter contained only 13·94 per cent. This superiority of the Scotch oat to the English oat in the quantity of the meal it contains and in the quality of that meal, will tend to explain the cause why oats are so much more valued in the north than in the south as a food material. At the same time, we must only take these results for what they are really worth : the comparison being between the coarse black oat of the south and the fine white oat of the north ;

and in both countries we know the white to be more nutritious than the black.”—*Wilson*.

The quantity sufficient for a horse daily varies from three-quarters of a peck to a peck and a quarter, divided either in three, four, or five feeds. The custom is now very general of giving a little chaff with the food in England. We commonly give a handful of dry bran with each feed.

It should always be borne in mind that, though large quantities of corn are sometimes given, there is a limit to the amount which a horse can assimilate; and it is an error to believe that the more work imposed on the animal, the greater the amount of food required. Scotch farmers often err, and fail to keep their horses in health and condition, by giving from 18lbs. to 24lbs. of oats daily, with little or no hay, and substituting for this bean straw and other indigestible fibrous material.

On the other hand, south of the Tweed, the error is often made of giving little or no hay, and but a small quantity of inferior oats, so that the horses are impoverished.

The cart-horses of some of the public companies and large firms in London are allowed a weight of forage in excess of that which we prescribe or have usually given. In these establishments the horses are worked hard for many hours daily, and from the food being given in nose-bags, a certain portion is lost. In one of the large London breweries the daily allowance for each horse is—

Best clover hay cut into chaff . . .	22 lbs.
Crushed oats	13 lbs.
White peas	3 lbs.
Indian corn	3 lbs.
	41 lbs.

No hay is given in the racks, with the exception of a little uncut clover on Sundays.

The cart-horses of one of the railway companies are allowed—

Oats (unbruised)	18 lbs.
Split beans	4 lbs.
Hay cut into chaff	14 lbs.
	36 lbs.

In this case, again, the hay is all cut into chaff, so that it may be given in the nose-bag, whereas we should recommend half the daily allowance of hay to be given whole in the rack at night-time, and two pounds of the split beans might be beneficially superseded by two pounds of bran.

As to *bruising oats*, we have simply to state that experience has demonstrated to our satisfaction that it is not advisable to supersede the action of the horse's teeth. It is undoubtedly a fact that when horses are fed on unbruised corn some grains escape mastication, and if so they certainly pass through the alimentary canal unchanged; but we assert that we can feed horses and produce better working condition with a given quantity of unbruised oats than we have witnessed as the result of the opposite system.

Beans constitute a valuable addition to the ordinary food of the horse under certain circumstances. The small horse-bean is the best, and varies from 60 lbs. to 65 lbs. per bushel, and its proximate composition is—

40 PLAIN RULES FOR THE STABLE.

Water	15·5
Husk	16·2
Meal	68·3
	100·0

It is best to give the beans split, and the quantity may be a single handful to each feed of oats. When given as a matter of necessity in substitution for oats, mix the beans with three or four times their weight of bran.

Beans are recognised as valuable for giving great firmness and tone to the muscular system, but this is not obtained as the direct result of a single feed, just when the exertion is required, as is sometimes supposed, when horses are being used on a journey. It is in a proper course of preparation, such as in training the race-horse or hunter, or other animal required for constant hard work, that the moderate use of beans is indicated.

Bran is separated from wheat in grinding, and always contains a large amount of highly nutritious material. Johnston gives the following as the average composition of bran :—

Water	13·1
Nitrogen compounds . . .	19·3
Oil	4·7
Husk	55·6
Ash	7·3
	100·0

Inferior kinds are obtained, as bran is sometimes subjected to a special process for the complete separation of the flour from the husks.

Bran is more indigestible than other materials of less nutritive value, owing to the nature and structure of the hard elements composing it. It has, indeed, been regarded as an agent useful for its indigestibility, and so far irritating to the intestinal mucous membrane, so as to favour relaxation of the bowels. The practice is, however, objectionable, of loading the alimentary canal with anything which effectually resists the solvent processes to which it has to be subjected. The results of such a practice are a useless expenditure of vital force and the frequent accumulation, especially in the large intestines of equine animals, of

coarse husks which are capable of inducing severe impactions and material derangement. We have often seen hard intestinal concretions composed mainly of bran, which had become imprisoned in the large pouches of the horse's intestines.

Barley is the staple food for horses in some countries; it is here, however, only used for exceptional purposes, either in the case of invalid horses or such as require to be fattened. The common, or English, barley is the variety generally used, and contains—

Water	14
Nitrogen compounds, or gluten, &c. .	14
Starch	68
Fatty matters	2
Ash	2
	100

We adopt the plan of boiling barley in sufficient water. This water is thrown off, fresh water is added, and when the barley has swollen to its full extent we add bran, so as to make a crisp moist mass, which is very digestible and highly nutritious for poor or convalescent horses.

A handful of barley-meal, mixed with half a pailful of tepid water to drink, tends to refresh and nourish a tired and thirsty horse.

Wheat is only given to horses under rare circumstances, when oats and beans cannot be procured. It is a dangerous form of provender, from its tendency to great cohesiveness in the stomach, and fatal forms of gastric impaction have been frequently seen to follow its intentional or accidental use for horses. Whenever wheat is given it must be supplied in very small quantities at a time, and given with a large proportion of dry bran.

Maize, or Indian corn, has been largely used in some parts of the world as food for horses ; it agrees with them perfectly, if bruised and given with some bran. Its nutritive properties are high, as indicated by the subjoined analysis :—

Water	14·96
Flesh-forming constituents . . .	11·27
Heat and fat-producing substances	67·48
Woody indigestible fibre . . .	5·02
Inorganic matter (ash)	1·27

100·00

Linseed and *linseed cake* are occasionally used for horses, and especially for colts, in being prepared for sale. Some of the Scotch cart-horse dealers, and even gentlemen, in getting up colts, give oil-cake, cut up in coarse bits; and when horses are accustomed to the food they lay on fat with it, though they do not acquire firm condition.

Linseed cake may be found a useful kind of food for delicate horses after protracted illness, when, to favour the return of a proper digestion, various articles of diet are tried. The composition of linseed and linseed cake is as follows :—

	Linseed.	Linseed cake.
Water	7·50	12·44
Oil	34·00	12·79
Flesh-forming matters .	24·44	27·69
Heat-giving constituents .	30·73	40·95
Inorganic matters (ash) .	3·33	6·13
	100·00	100·00

The *locust* or *carob bean*, has been introduced of late years in this country. It is largely used as food for inferior horses in Southern

Italy, Egypt, and elsewhere. It has been recognised as valuable for fattening purposes from the large amount of sugar it contains. Its composition is given in the subjoined table, both in the natural and dry state:—

	In natural state.	In dry.
Water	14·22 . .	00·00
Sugar	54·07 . .	63·03
Mucilage and other digestible		
respiratory principles . .	17·41 . .	20·30
Woody fibre	3·88 . .	4·52
Oil	0·96 . .	1·12
Flesh-forming principle . .	7·72 . .	9·00
Insoluble ash	0·62 . .	0·72
Soluble ash	1·12 . .	1·31

The pods are crushed and usually mixed with chaff or bran. We have noticed in this country that they have a tendency to choke horses, and to induce dangerous and obstinate colics. Abroad we have found them deleterious, when the hard seeds they contain were not separated from the pods prior to their being given to the horse. The hard seeds are apt to lodge in the large intestines and endanger the lives of animals.

Green food given to stable-kept horses consists of cut grass, clover, vetches, &c. in the summer.

The practice of giving green food to horses in towns, whether alone or combined with hay, is not to be recommended. The grass is usually stale; and is devoured voraciously; it induces a relaxed state of the bowels, and throws horses out of condition. Derangements of the digestive organs, and susceptibility to catarrhs and colds, are amongst the results of the cut grass system.

Carrots are the best of the various roots for horse-feeding. All horses like them. They should not be given in large quantities, but two or three roots may be split up and thrown into the manger occasionally between ordinary feeding times. Horses are apt to be choked, if carrots are broken in pieces instead of being sliced lengthways into thin portions.

Turnips are used extensively, and especially in North Britain, as food for horses. Swedes contain less water and more nutritive matter than the common turnip.

	Analysed by Dr. Voelcker.			Analysed by Dr. Anderson.	
	White Globe.	Norfolk Bell.	Swedish Turnip.	Purple-top Yellows.	Aberdeen Yellows.
Water.....	90·430	92·280	89·460	91·200	90·578
Flesh-forming substances	1·143	1·737	1·443	1·117	1·802
Fatty matters	not determined.			0·103	0·441
Sugar, pectin, gum, &c.	5·457	2·962	5·932	4·333	4·181
Woody fibre	2·342	2·000	2·542	2·607	2·349
Inorganic matters (ash)	0·628	1·021	0·623	0·640	0·649

Mangel-wurzel has been extensively used by farmers as a food for horses. It is apt to purge when given in a fresh state, and should therefore be kept three or four months in the store-heap.

NUTRITIVE VALUE OF MANGOLD.

	In natural state
Water	87·78
Flesh-forming constituents . . .	1·54
Woody fibre	1·12
Sugar	6·10
Pectin, gum	2·50
Inorganic matters (ash)	0·96

We may mention in general terms that, with the exception of carrots given spar-

ingly, roots are not advisable for town-fed horses.

All horses, whether in town or country, are injured by the boiled or steamed mash of swedes, common turnip, and barley, &c., with which they are extensively supplied in Scotland. The mortality from colic is always high where the boiled-meat system is in vogue.

Pulping roots has met with its strong advocates for horses used on the farm, and pulped mangel, along with chaff, has been pronounced "the best, cheapest, and most healthy food horses can eat." This may be the fact under extraordinary circumstances, but we condemn boiling, steaming, and pulping for general purposes and when horses are required for hard and fast work. This may not hold good if they are being prepared for some of the French and German horse-meat shops.

Potatoes are not unfrequently given to horses, and for this purpose they are boiled or steamed and mixed with other foods. They are always objectionable, as their skins are extremely indigestible and capable of inducing

severe colics with diarrhœa. These results are more common when farmers are injudicious enough to give their horses diseased potatoes, which, according to our experience, not unfrequently induce fatal effects.

Artificial or concentrated foods, condiments, and spices received their death-blow at the hand of Mr. J. B. Lawes, and their effects have been well investigated. When a so-called concentrated or condimental food is used, a larger quantity of food is required to give the same increase of flesh that may be obtained without it. An article having tonic and stimulating properties may excite the appetite, but it is not likely to increase the assimilation of food. We may make a large quantity of food pass through the stomach of an animal, but cannot cause that quantity to be transformed into the blood and tissues of the body. Mr. Lawes calls condimental foods "medicines," and we may add "dear medicines" too.

Medicated foods—that is to say, the ordinary foods of horses combined with proper quantities

of medicinal substances—may be useful in disease. We have advocated the medication of foods for the prevention of certain cattle diseases; but this only because it is difficult, not to say impossible, to dose herds of cattle and flocks of sheep. The same remark can scarcely be held as applicable in the case of horses.

Mashes.—Bran mashes are given either warm or cold, and are made by putting a given quantity of bran into a pail and adding sufficient water to moisten it. When a warm mash is required, hot water should not be poured on the bran, because it renders the mash pasty. For such a purpose, take water at the required temperature, and add the bran to it. We object to mashes to the extent they are usually given, and they are not required as a regular weekly meal in the way so commonly prescribed. We have in all cases, where we formerly gave a mash, adopted instead a beverage composed of water, cold or tepid, to which we add two or three double handfuls of fresh bran. This mixture leaves suspended

the farinaceous and fine particles of bran ; the horse drinks it with relish, and the refuse remains at the bottom of the pail. Such a beverage is at once refreshing, nutritious, and moderately aperient.

WATERING.

Pure water in sufficient quantity is essential to the horse's health and vigour. It should be given at regular intervals. We need not discuss the relative merits of keeping water always before the horse or allowing a sufficient quantity thrice daily. We adopt and prefer the last-named practice. When horses are systematically watered, they neither drink immoderately at any one time, nor do they suffer from thirst by involuntary abstinence. There is one point to be specially attended to in watering horses, and that is, not to allow them to drink just before going to fast work. Some grooms give their horses two or three gulps of water on hunting mornings at saddling time. This is not only unnecessary, but

rather excites the horse to drink than satiates him.

EXERCISE.

Close and solitary confinement is as injurious to horses as it is to men. It engenders disease and bad habits. Horses, moreover, require to be prepared for special work; and whilst we have not to deal with training here, we may mention that a high state of tone and muscular activity can only be acquired by apportioning food and work with great judgment and discretion over a considerable period of time. We cannot improve a horse's endurance by excessive exertion, to which he may be subjected rarely, and then with the sole result of fatiguing him. Time, patience, regular and diversified exercise, are essential to ensure a high state of fitness for any work.

Two hours walking at a time is enough for any horse in the way of exercise, and in this period nearly nine miles of ground will be passed over. When special circumstances call for more exercise we prefer to alter the pace,

and to give horses a steady trot for two miles rather than keep them out longer. During long frosts, when going on a straw bed, it may be more convenient and better for the horses to divide their exercise, when from two and a half to three hours may be apportioned between the morning and afternoon. Though less walking than is here prescribed is usually given, much more has also been recommended; some writers seem to think that the more a horse is made to walk the more enduring in work does he become. This is not in accordance with our experience. We find that in four hours' walking exercise, recommended by some, eighteen miles would be walked over; and this is a good march, or a fair day's journey for horses travelling long distances in successive days. If an excessive amount of walking exercise were advantageous, we should find that horses just off long journeys—say of 1000 miles—would be in the best state for such fast work as hunting; whereas we find them to be in the worst, and to require weeks and even months to be got ready.

Horses are apt to sustain accidents when put to fast exercise. This specially applies to hunters, which do not generally take their canters steadily as race-horses do ; neither have they, as a rule, such good ground to go over, or lads to ride them equally well up to the work. Going to covert and coursing afford good exercise for hunters. Whilst coursing, some nice spurts are met with, and convenient fences to put young horses over—a mode of exercise always preferable to riding hunters over the leaping-bar, which is apt to disgust good horses, who, no less than riders, take their leaps much better when in the enjoyment of sport than when going to and fro in search of timber.

SUMMERING HUNTERS.

We remember the time when all practical men were agreed on the proper mode of summering hunters. The rational system of the past has been to a great extent superseded of late years. What that rational system was we can readily explain.

Firstly. Horses were more exclusively kept for the express purpose of hunting than they are now.

Secondly. At the end of the season hunters were gradually stripped, stable doors thrown open, and the ordinary process of cleaning was reduced to the use of a damp wisp, cleaning the manes and tails, feet and legs.

Thirdly. After the preparation thus detailed, and the month of May advanced, the horses were turned out. They were not abandoned to themselves, but set free in the open fields for two or three hours in the middle of the day. They were taken into the stable in the afternoon, and as the weather grew warm, were turned out morning and evening, and kept up during the middle of the day and at night. Sometimes in the month of July they were left out all night and kept up in the day-time.

Fourthly. Hay and corn was given in such proportions as was deemed necessary for each particular horse, according to their state and constitution.

Fifthly. About the end of July hunters were taken up for gentle exercise and to be prepared for the following season.

The objectionable parts of the old system were—*a*, a course of firing and blistering prior to turning out; *b*, constantly tampering with their feet; applying tips, removing them, and paring the horse's feet every fortnight, by which more damage was usually done in half an hour than could be remedied in the natural process of reproduction by growth in a month; *c*, after taking the horses up, they were all bled and physicked. We need scarcely say that the bleeding never could do otherwise than injure, whereas the abuse of purgatives was likewise most detrimental.

It is impossible to describe the many plans now in vogue for the summering of hunters; horses not used for other purposes, are very commonly kept during the entire summer in loose boxes, where they are supplied with green food and corn and hay. This process is termed "soiling hunters." It is more or less successful according to the mode in which it is

carried out. It affords no advantage over the older system, but, on the contrary, it is not attended with the restorative influence which that afforded from the free voluntary exercise and exposure to the open air. The stable-fed horse becomes heavy and fat, and does not come into condition as the horse recently taken up after a brief run at large, and which is peculiarly light and springy.

Those who hunt and want to use their horses for other purposes during the summer, must often put up with stale animals in the season. The practice of turning out in the month of August or September is essentially bad, and deranges horses for every purpose for the ensuing winter.

It must, therefore, be understood that we advocate the old practice of summering hunters duly modified by the judicious management of their feet, and avoiding the objectionable practices referred to.

If horses were well shod during winter, they ought to be turned out with feet in a fit state to go without shoes. This, we fear, will seldom

be the case, from the very common and objectionable use of the drawing-knife and the process of softening feet now in vogue. The fore-feet must therefore, in some instances at least, be shod. But it should not be forgotten, that in the space of two months, most horses' feet left alone unshod when going on dry pasture, would recover to an extent which would make up for any little inconvenience attendant on the breaking of the thin edges of the hoof on first turning out. When shoeing is necessary at grass, good ordinary shoes must be applied to the fore-feet only, and kept on without removing for not less than a month. The hind-feet should not be shod, owing to the possibility of horses injuring each other by kicking.

THE STRAW YARD.

When horses are not required during the winter, and sometimes in cases of chronic lameness, the practice of turning them into a straw-yard is recommended. There are few circumstances under which such a system is

advisable. Cart-colts, which cannot conveniently be kept elsewhere, are allowed to run about with the bullocks, and usually to their detriment; well-bred horses always suffer from exposure, improper feeding, and from the injurious influence of a deep bed of dung under their feet.

MANAGEMENT OF FEET.

There is no branch of stable economy of greater moment than that of attending to the preservation of horses' feet.

Cleanliness and dryness are the first essentials. Wet pads, swabs, sponge-boots, and stoppings are unmitigated evils. However widely diffused may be the notions which have led to the adoption of means for soaking horses' hoofs, they are unquestionably based on error.

The hoofs of horses are only equal to their normal functions when their texture is firm, tough, and resistant; hence the necessity of avoiding moisture and alternate dryness.

We never allow the stopping box to enter

our stable, and the plea of softening the feet preparatory to shoeing should not be admitted. Paring the sole is not compatible with good practice, and should not be had recourse to.

Not only do we condemn the artificial wetting of horses' feet, but we also recognise the baneful influence of the excess of moisture to which they are necessarily exposed in work. In order, therefore, to ensure at all times a normal elasticity, tenacity, and firmness of hoof, and to prevent the damaging influence of wet roads, we have long advocated and carried out in practice the system of using a carefully prepared ointment. Horn and hair are identical products, and no man would imagine that he could strengthen and benefit the latter by soaking it constantly in water. All recognise the value of cleanliness and the protective power of unctuous substances. These prevent the desiccation and desquamation of the cells or scales of which both hair and hoof are composed.

Shoeing calls for special attention on the part of the stableman. It is not to be sup-

posed that he should understand the art of farriery, but he should watch the state of his horses' feet. The points which should engage his special attention in this particular case are—

Firstly; noting the recurring periods of shoeing. As a rule, horses should wear their shoes about thirty days. This applies to carriage horses, hacks, and others in ordinary work. Hunters require shoeing every twenty-one to twenty-five days, and the same remark applies to horses in training in full work. This obviates the necessity of removes, a practice which when had recourse to with a view to paring feet, is highly objectionable.

Secondly; stablemen have to examine their horses' feet day by day to see that no nails are wanting, and that there are no clenches up; they have also to see that the horses are not cutting, and that nothing obviously wrong exists.

Note.—In addition to the objections raised to swabs and stopping, we have to enter our protest against causing horses, under any

circumstances, to stand on wet clay, wet saw-dust, damp sand, or for hours together in tubs of water. Fomentations may be prescribed by the veterinarian, but prolonged soaking of the feet day after day is always detrimental.

THE USE AND ABUSE OF MEDICINES.

It has been justly remarked, that the practice of blood-letting first received its greatest discouragement amongst Veterinarians, and we abandoned it early in our career. The raising our voices against the supposed indispensable requisite blood-letting before a horse was put in training was met with as much dissatisfaction as have been our attacks upon some of the popular errors of the present day.

Not many years ago one of our most noted trainers said to his head-lad: "We shall not bleed our young ones this year." Without comment the lad walked away, but returned to his master on a subsequent occasion, and said: "Well, sir, you may scratch all these

two-year olds." In reply to the question "Why?" he answered, "Because you are changing all our old systems by not bleeding."

Widely as the practice has been abandoned, there is still a notion, especially amongst farmers, that early bleeding is the best means to save an animal's life. It is supposed by some who take charge of horses, that to know how to bleed is an accomplishment. We unhesitatingly assert that the last thing to be tolerated is the permitting a non-professional man to draw blood from a horse, whether in health or disease.

Physicking horses is one amongst the most glaring abuses of stable-management in the present day. A correspondent of the *Field*, with much justice, remarked of late that it is "almost incredible, that in these days horses in perfect health should be compelled to swallow from twelve to fifteen drachms of aloes every August, and throughout the hunting season should be drugged by grooms with medicines, of the action of which they know but little."

There are two sides to this question. No

medicinal agent exerts a greater influence for good in a vast number of the diseases of the horse than an aloetic purge. A prompt, safe, and restorative action may be calculated on in many instances by the experienced professional man, especially when due care is exercised to avoid any drastic effect. On the other hand, this powerful means for good is most dangerous in the hands of persons who are disposed to tamper with horses in health, and know little or nothing about disease. The owner of horses who expects his coachman or groom to prescribe doses of physic, condition and diuretic balls, powders, &c., might as well have a valet to dose him with drugs and assume the duty of house physician. The one will know as much of his own organization as the other does of the functions and diseases of horses.

The point we wish to impress on horse owners and their servants is, that we cannot improve on the healthy state; we cannot make horses healthier than healthy. Medicine relieves in sickness, as a rule, by producing a disturbance, which, though a necessary evil in

medical practice, is best avoided when not called for by any diseased state.

The practice prevails of giving strong physic to stout horses in order to lighten them for work. This is an irrational plan, since, as the horse is under our control, we can so regulate his diet as to quantity, as not only to prevent any increase in weight, but in reality to lighten him. This is the safest, most direct, and most economical method. The horse does not lose an hour's work, his system is not racked, and the supply of food may be augmented at any moment.

Preparing a horse for physic is a point on which much is often said, and the very fact that a day or two may be devoted to this purpose affords proof positive that no purge is required. If the animal is sick the medicine is required at once. The common plan of loading a horse's intestines with bran mashes only favours an appearance of great effect, which is far from being desirable. The more wet bran the horse swallows the more material will he have to discharge, and this at the expense of

no little vital force. All we do when giving physic in the less urgent cases is to have the horse kept three or four hours without food previous to administering the medicine. After a ball is given we allow the horse to drink, and for the succeeding twelve hours we give occasionally a very small portion of hay. Bran-and-water is allowed in a pail, so that he may drink at frequent intervals. We have to protest in the strongest terms against the custom of exercising horses to work off the physic. They should be left at rest until the medicine has acted. Strong purgatives are highly objectionable and dangerous, so that persons should not try, as they often do, to obtain an excessive action. The supposed benefit of clearing a horse out is altogether delusive.

The administration of a ball is not always effected with neatness and precision. The rules to attend to are as follows: Firstly; turn the horse from his manger with a loose halter, or one held by a groom or assistant. The attempt should never be made of giving a ball

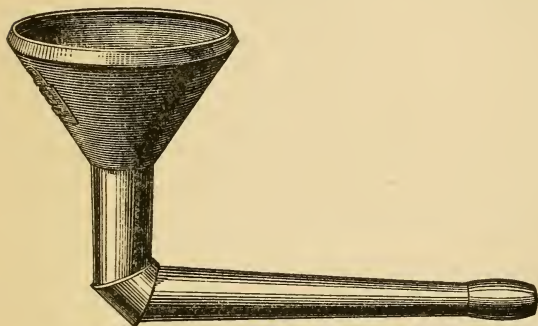
to a horse when tied up in his stall. Secondly ; stand on the off side of the horse's head ; introduce the right hand into the angle of mouth, seize the tongue, and, if necessary, wipe it with a towel ; then draw the tongue downwards and grasp it with the left hand, in such a manner as to dilate the mouth, and have a bearing point against the lower jaw. The tongue should be so held that, should the horse toss his head about, the organ cannot be lacerated. Thirdly ; the ball, seized between the index, middle, and ring finger of the right hand, is passed up the centre of the mouth and deposited on the back of the tongue, just as the left hand releases its hold. By this means the ball is drawn upwards with the tongue, and being engaged in the throat is at once swallowed : it cannot return except it be coughed back. Fourthly ; it is desirable to give the horse a little water to drink, so as to aid in the deglutition of the ball ; especially as in cases of sickness the passage may be dry and the ball then sticks in the gullet. The course of the gullet is usually watched on the

left side of the neck to see if the ball passes down.

Giving a ball is a simple process if done quietly and deliberately. Many animals get hard to manage from being often tormented, and then persons have recourse to twitching. This is extremely dangerous, as a horse deadened to pain by the twitch, cares little for the tongue being pulled upon, and often closes his jaws on the operator's hand. Balling irons are occasionally required, but we recommend stablemen to apply to a professional man when there is any difficulty in giving a horse a ball.

Clysters constitute the safest and best means to be resorted to in the early stages of most diseases. They never injure, and have often the advantage of relieving early, and before professional aid can be obtained. We have introduced a system of administering clysters which renders the process very simple and effective. It consists in using an enema funnel of proper size and form, such as we have had constructed

by Mr. Latchford, bit-maker, &c., St. Martin's-lane. The tube is oiled and inserted, and an assistant pours into the funnel from a quart to three pints of warm water. We avoid all irritants, and trust to the emollient and evacuant action of the simple fluid. It will be found that not unfrequently direct re-



lief is obtained, and the water, displacing the internal gases, finds its way into the rectum much better than when force is used for its propulsion.

Drenches are much in favour amongst both veterinarians and stablemen. We object to them, as a rule, from the uncertainty with

which a given dose can be administered, and the danger of injuring the animal in the act of drenching him. We prefer balls ; and when sore throats and coughs render these at all objectionable, from the difficulty with which they are swallowed, we prefer mixing medicines with treacle or honey when they are given in the form of an electuary.

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LONDON.

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